

I CLAIM:

1. An imaging system comprising:

a radiation generator that generates a beam of radiation along a first direction;

5 an object that receives said beam of radiation, wherein a first portion of said beam of radiation is transmitted through said object along said first direction and a second portion of said beam of radiation is refracted along a second direction;

10 an analyzer that receives said first and second portions of said beam of radiation, said analyzer suppresses the intensity of said first portion of said beam of radiation and transmits said second portion of said beam of radiation; and a detector system that receives from said analyzer said suppressed first portion of said beam of radiation and said transmitted second portion of said beam of radiation and generates an image of said object.

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2. The imaging system of claim 1, wherein said beam of radiation is a parallel beam of radiation.

20 3. The imaging system of claim 1, wherein said radiation generator comprises an x-ray source that generates a beam of x-rays.

4. The imaging system of claim 2, wherein said radiation generator comprises an x-ray source that generates a beam of x-rays.

5. The imaging system of claim 3, wherein said radiation generator comprises a monochromator that receives said beam of x-rays from said x-ray source and generates a parallel beam of x-rays.

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6. The imaging system of claim 4, wherein said x-ray source works in a linear projection mode.

7. The imaging system of claim 1, wherein said object is smaller
10 than said beam of radiation.

8. The imaging system of claim 1, wherein said analyzer comprises a multilayer mirror.

15 9. The imaging system of claim 3, wherein said analyzer comprises a multilayer mirror.

10. The imaging system of claim 8, wherein said multilayer mirror comprises alternating layers of materials with large and small atomic numbers,
20 wherein the thicknesses of the alternating layers is varied so as to suppress the intensity of said first portion of said beam of radiation.

11. The imaging system of claim 10, wherein said material with a

large atomic number is tungsten and said material with a small atomic number is boron-carbon.

12. The imaging system of claim 9, wherein said multilayer mirror
5 comprises alternating layers of materials with large and small atomic numbers,
wherein the thicknesses of the alternating layers is varied so as to suppress the
intensity of said first portion of said x-ray beam.

13. The imaging system of claim 12, wherein said material with a
10 large atomic number is tungsten and said material with a small atomic number is
boron-carbon.

14. The imaging system of claim 4, wherein said x-ray source
operates in a point projection mode.

15. The imaging system of claim 14, wherein said object moves
relative to said detector system.

16. The imaging system of claim 15, wherein said detector system
20 comprises a detector comprising a column of sensitive elements.

17. The imaging system of claim 16, wherein signals from said
column of sensitive elements are averaged to obtain an image signal.

18. The imaging system of claim 17, wherein said image signal is represented by the formula:

$$v_{kj} = \frac{1}{m} \sum_{i=1}^m u_{ij} [\tau(k-i)],$$

5 where $u_{ij}(t)$ is the signal generated by the sensitive element located at the i th row and j th column of the detector array, τ is the time interval during which the object is shifted by a distance equal to a single detector element, m is the number of columns of sensitive elements in the detector, k is the image obtained at time $t=k\tau$.

10 19. A method of imaging an object, comprising:

subjecting an object to a beam of radiation that is directed along a first direction;

analyzing a first portion of said beam of radiation that is transmitted through said object so that the intensity of said first portion is suppressed;

15 analyzing a second portion of said beam of radiation that is refracted from said object;

generating an image of said object based on said suppressed first portion of said beam of radiation and said second portion of said beam of radiation.

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20. The method of claim 19, wherein said beam of radiation is a parallel beam of radiation.

21. The method of claim 19, wherein said beam of radiation comprises x-rays.

5 22. The method of claim 20, wherein said beam of radiation comprises x-rays.

23. The method of claim 19, wherein said object does not move during said generating an image.

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24. The method of claim 19, wherein said object moves during said generating an image.

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25. The method of claim 19, wherein said generating an image comprises averaging signals from a column of sensitive elements of a detector.